United Nations FCCC/SBI/ICA/2018/TASR.2/LBN

Framework Convention on Climate Change

Distr.: General
17 August 2018

English only

Technical analysis of the second biennial update report of Lebanon submitted on 13 October 2017

Summary report by the team of technical experts

Summary

According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention (non-Annex I Parties), consistent with their capabilities and the level of support provided for reporting, were to submit their first biennial update report (BUR) by December 2014. Further, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit BURs at their discretion. This summary report presents the results of the technical analysis of the second BUR of Lebanon conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

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Abbreviations and acronyms

AD	activity data
BUR	biennial update report
CBIT	Capacity Building Initiative for Transparency
CGE	Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COP	Conference of the Parties
EF	emission factor
EU	European Union
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	*Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*
IPCC good practice guidance for LULUCF	*Good Practice Guidance for Land Use, Land-Use Change and Forestry*
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MISCA	Management and Information System for Climate Action
MRV	measurement, reporting and verification
N_2O	nitrous oxide
NA	not applicable
NAMA	nationally appropriate mitigation action
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NMVOC	non-methane volatile organic compound
NO	not occurring
NOx	nitrogen oxides
non-Annex I Parties	Parties not included in Annex I to the Convention
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	*Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*
SF_6	sulfur hexafluoride
SOx	sulfur oxides
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention"
UNFCCC reporting guidelines on BURs	"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention"

I. Introduction and process overview

A. Introduction

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and record, respectively.

2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistent with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.

3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BURs. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.

4. Lebanon submitted its first BUR on 13 October 2015, which was analysed by a TTE in the fourth round of technical analysis of BURs from non-Annex I Parties, conducted on 29 February to 4 March 2016. After the publication of its summary report, Lebanon participated in the second workshop for the facilitative sharing of views, convened in Marrakech, Morocco, on 10 and 11 November 2016.

5. This summary report presents the results of the technical analysis of the second BUR of Lebanon undertaken by a TTE in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

B. Process overview

6. Lebanon submitted its second BUR on 13 October 2017, which is within two years since the submission of the first BUR.

7. The technical analysis of the BUR took place from 5 to 9 March 2018 in Bonn, Germany, and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Ms. Estefania Ardila Robles (member of the CGE from Colombia), Ms. Rocio Danica Condor (Italy), Ms. Ludmila Hristova Naydenova (Netherlands), Ms. Sekai Ngarize (Zimbabwe), Ms. Anne Nyatichi Omambia (former member of the CGE from Kenya), Ms. Lilian Portillo (former member of the CGE from Paraguay), Mr. Ioannis Sempos (Greece) and Mr. Arda Uludag (Turkey). Ms. Ngarize and Mr. Sempos were the co-leads. The technical analysis was coordinated by Ms. Anna Sikharulidze and Ms. Alma Jean (secretariat).

8. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR, the TTE and Lebanon engaged in consultation[1] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Lebanon's second BUR, the TTE prepared and shared a draft summary report with Lebanon on 4 June 2018 for its review and comment. Lebanon, in turn, provided its feedback on the draft summary report on 20 June 2018.

[1] The consultation was conducted via teleconferencing.

9. The TTE responded to and incorporated the Party's comments referred to in paragraph 8 above and finalized the summary report in consultation with Lebanon on 20 June 2018.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

10. The scope of the technical analysis is outlined in decision 20/CP.19, annex, paragraph 15, according to which the technical analysis aims to, without engaging in a discussion on the appropriateness of the actions, increase the transparency of mitigation actions and their effects and shall entail the following:

(a) The identification of the extent to which the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines (decision 2/CP.17, annex IV) have been included in the BUR of the Party concerned (see chapter II.B below);

(b) A technical analysis of the information reported in the BUR, specified in the UNFCCC reporting guidelines on BURs (decision 2/CP.17, annex III), and any additional technical information provided by the Party concerned (see chapter II.C below);

(c) The identification, in consultation with the Party concerned, of capacity-building needs related to the facilitation of reporting in accordance with the UNFCCC reporting guidelines on BURs and to participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention (see chapter II.D below).

11. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Lebanon's BUR outlined in paragraph 10 above.

B. Extent of information reported

12. The elements of information referred to in paragraph 10(a) above include the national GHG inventory report; information on mitigation actions, including a description of such actions, an analysis of their impacts and the associated methodologies and assumptions, and the progress made in their implementation; information on domestic MRV; and information on support needed and received.

13. According to decision 20/CP.19, annex, paragraph 15 (a), in undertaking the technical analysis of the submitted BUR, the TTE is to identify the extent to which the elements of information listed in paragraph 12 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs. Specific details on the extent of the information reported for each of the required elements are provided in annex I.

14. The TTE notes improvements in the reporting in the second BUR compared to the first BUR. Information on GHG inventories, mitigation actions and their effects, and needs and support reported in the second BUR demonstrates that the Party has taken into consideration the areas for enhanced transparency noted by the TTE in the summary report on the technical analysis of its first BUR. These include providing information relating to: AD, EFs and assumptions made for emission estimations; NAMAs; international market mechanisms; mitigation potential of implemented actions, in particular in the energy and LULUCF sectors; reporting of support received; and identification of gaps and constraints.

C. Technical analysis of the information reported

15. The technical analysis referred to in paragraph 10(b) above aims to increase the transparency of mitigation actions and their effects, without engaging in a discussion on the

appropriateness of those actions. Accordingly, the technical analysis focused on the transparency of the information reported in the BUR.

16. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs.

17. The results of the technical analysis are presented in the remainder of this chapter.

1. Information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis

18. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently submitted NC, including information on national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis. In their NCs, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5.

19. In accordance with decision 17/CP.8, annex, paragraph 3, in the second BUR, the Party provided an update of its national circumstances, including: government structure, population profile, geographic profile, climate profile, economic profile and information on the energy, transport, industry, waste, agriculture and LULUCF sectors.

20. In addition, as encouraged in decision 17/CP.8, annex, paragraph 4, Lebanon provided a summary of relevant information regarding its national circumstances in tabular format. Lebanon also provided graphs on vehicle fleet distribution in 2013, distribution of industrial establishments by economic activity in 2007, agricultural land use and agricultural production and a table of municipal solid waste treatment facilities implemented by the Office of the Minister of State for Administrative Reform.

21. Lebanon transparently described in its BUR the existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers key aspects of the institutional arrangements, such as the main coordinator for climate change, the National Council for the Environment, which is mandated to approve environmental policies and strategies and integrate environmental concepts. Lebanon also provided information on the composition of the National Council for the Environment, the legal framework for the work on climate change in the country, as well as cooperation between the Ministries of Environment, Industry and Finance.

22. In its BUR, Lebanon reported that following the development of Lebanon's NDC and
the entry into force of the Paris Agreement, the envisaged MRV unit described in Lebanon's first BUR has further been conceptually developed into an MRV coordinating entity which still needs to be established. Lebanon also reported on MISCA. It is designed at the national level, covers the energy sector and is intended to track the progress of the implementation of Lebanon's NDC. The Ministry of Environment aims at expanding the MISCA initiative to include other ministries in the future, based on the experience and lessons learned from the first phase, and this is reported as an important move towards enhancing the effectiveness and transparency of Lebanon's MRV of data on climate action. During the technical analysis, Lebanon informed the TTE that the Party's proposal submitted to the GEF under CBIT, which includes activities related to the identification of mitigation progress and reporting indicators, has been recently approved and is expected to start in the first quarter of 2019. Lebanon also indicated that under CBIT, priority will be given to developing indicators for sectors that are included in Lebanon's NDC and, if time and financial resources are available, additional indicators can be developed for the agriculture and IPPU sectors.

2. National greenhouse gas emissions by sources and removals by sinks

23. As indicated in table 1 in annex I, Lebanon reported information on its GHG inventory in its BUR mostly in accordance with paragraphs 3–10 of the UNFCCC reporting

guidelines on BURs and paragraphs 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8.

24. Lebanon submitted its second BUR in 2017 and the GHG inventory reported is for 2013, which is consistent with the requirements for the reporting time frame. An updated time series covering previously reported years (1994, 2000, 2006, 2011 and 2012) was also included in the BUR at the level of total emissions by sector. Total emissions excluding LULUCF were not provided consistently for same individual years of the time series; removals from this sector were reported separately for a different selection of individual years (1994, 2000, 2005, 2010 and 2013). During the technical analysis, Lebanon clarified that it has calculated removals from the LULUCF sector for all years in the period 1994–2013 and the years that were presented are editorial choices. In addition, Lebanon reported the key differences in total annual emissions arising from recalculations and the reasons for these differences in the BUR. The TTE commends Lebanon for this effort.

25. GHG emissions and removals for the BUR submission covering the years 1994, 2000, 2006, 2011, 2012 and 2013 were estimated using mainly a tier 1 methodology from the Revised 1996 IPCC Guidelines, also applying the IPCC good practice guidance for LULUCF and in some cases the IPCC good practice guidance, as appropriate.

26. With regard to the methodologies used, information was reported including tiers, sources of the AD and EFs used, other parameters and the assumptions made for each inventory category in a mostly transparent manner. Methods used for land-use change detection were not described. During the technical analysis, Lebanon clarified that AD for the entire national territory were obtained through the use of satellite image objects applying Geographic Object-Based Image Analysis, an advanced, automatized technique for satellite image processing. Images were segmented and image objects classified based on spectral and contextual information. The TTE notes that the inclusion of this information in the BUR could facilitate a better understanding of the information reported.

27. The total GHG emissions for 2013 reported in the BUR, including and excluding LULUCF, amounted to 22,765.89 and 26,284.69 Gg CO_2 eq, respectively, an increase of 133 per cent and 99 per cent, respectively, since 1994 (9,736 Gg CO_2 eq and 13,186 Gg CO_2 eq, respectively). The GHG emissions excluding LULUCF reported for 2013 comprise 23,246.21 Gg CO_2, 2,030.36 Gg CO_2 eq CH_4 and 1,008.53 Gg CO_2 eq N_2O. Lebanon did not report emissions of HFCs, PFCs and SF_6. During the technical analysis, the Party clarified that it has experienced difficulties in estimating these emissions owing to the absence of an inventory and coding system in the country to enable the tracking of imports and exports. Lebanon also explained that, through its National Ozone Office, it is currently intensifying its efforts to identify the consumption and current banks of HFCs in the country and that it intends to include estimates of fluorinated gas emissions in subsequent BURs.

28. Other emissions reported include 88.67 Gg NOx, 374.77 Gg CO, 117.19 Gg NMVOCs and 119.01 Gg SOx.

29. Lebanon applied notation keys in table 1 where numerical data were not provided. In some cases, particularly in LULUCF, the use of notation keys was not consistent with the Revised 1996 IPCC Guidelines. In cases when the notation key "NE" was reported, for example, for emissions from chemical industry and from solvent and other product use, Lebanon provided explanations in the BUR. The TTE notes that using notation keys together with relevant clarifications for all categories where emissions are not indicated could facilitate a better understanding of the information reported.

30. Lebanon reported comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines. The TTE experienced a challenge in understanding the approach taken by Lebanon to perform the calculations for these tables, because the information was disaggregated and reported across different sections of the BUR. During the technical analysis, Lebanon provided consolidated tables containing calculations, EFs, other parameters and updates of AD on activity levels for 2013. The TTE notes that including this information using the IPCC sectoral reporting tables in the BUR could facilitate a better understanding of the information reported.

31. The shares of emissions that different sectors contributed to the total GHG emissions excluding LULUCF as reported by the Party in 2013 are: energy, 79 per cent; industrial processes, 10 per cent; agriculture, 4 per cent; and waste, 7 per cent. LULUCF was responsible for removals of 3,518.80 Gg CO_2 eq.

32. GHG emissions in 2013 from the energy sector amounted to 20,775.10 Gg CO_2 eq. Information is clearly reported on the types of fuel imported and the assumptions made regarding its distribution by end use in the country, given the data limitations on this area and the lack of a national energy balance. To enable the TTE to better understand the emission estimates of the energy sector, Lebanon clarified the choice of EFs and explained the characteristics of the IPT Energy Center survey conducted in 2013 that served as a base to estimate emissions using the sectoral approach. Given the significance of energy emissions in the inventory, the TTE notes that including this information could enhance the transparency of the BUR in the future.

33. Lebanon reported the methodologies used (mostly tier 1) and the procedures undertaken to address the data gaps arising from the lack of records on fuel types, quantities and technologies used by private electricity generators, particularly under the manufacturing industries and construction category. During the technical analysis, Lebanon further clarified the source and choice of the fuel conversion factors applied to estimate emissions from stationary sources and informed the TTE that detailed studies will be necessary in order to develop more disaggregated parameters and data sets for AD. For the road transport category, identified as a key source for CO_2 emissions, Lebanon reported that, owing to the absence of fuel consumption data, it used country-specific information on assumptions about vehicles' annual mileage and classification of the vehicle fleet per category and EU emission control technologies, in combination with a tier 2 EF from the Revised 1996 IPCC Guidelines, to estimate emissions. The TTE commends Lebanon for this effort.

34. Industrial process emissions amounted to 2,545.42 Gg CO_2 eq, with the only source category reported being 2.A, mineral industry. In this category, a tier 2 methodology was applied to estimate emissions from cement production, which has been identified as a key source in the inventory. Emissions from other categories in the industrial processes sector, including emissions of HFCs, PFCs and SF_6, as well as emissions from solvent and other product use, were not reported. Lebanon transparently indicated which emissions are considered not to occur under other reporting categories and which could not be estimated owing to the lack of data and/or arrangements to obtain them, particularly for the production of glass, phosphate fertilizers, coffee, animal feeds, arrack and fluorinated gases. To enable the TTE to better understand the barriers related to data gathering in these sectors, Lebanon clarified, during the technical analysis, that the absence of a database of industries, including their consumption of raw material and annual production, poses a significant challenge for the collection of AD on solvent and other product use. Further, once a complete industrial database is available, the transparency of information reported will be improved. Lebanon indicated that for phosphate fertilizers production, the Ministry of Environment is coordinating with the Ministry of Industry in order to acquire data for estimating emissions and the Ministry of Industry is facing capacity-related challenges for the annual collection of data on industrial production (for all manufacturing sectors). The TTE notes that reporting emission estimates for those industries as well as for solvent and other product use and emissions from the consumption of HFCs, PFCs and SF_6 in the BUR could facilitate a better understanding of the information reported.

35. For the agriculture sector, Lebanon reported GHG emissions of 987.55 Gg CO_2 eq, with N_2O from agricultural soils being identified as the most significant emission source in the sector and a key emission source in the inventory. Rice cultivation, prescribed burning of savannahs and field burning of agricultural residues were reported as "NO". For AD Lebanon relied, as far as possible, on primary sources of information which, in a number of cases, were combined with external sources – primarily FAOSTAT – and complemented using techniques to address gaps derived from the IPCC guidance. Extrapolation and expert judgment were applied to obtain data sets for key drivers of emissions in the sector such as, the consumption of nitrogen fertilizer and some animal populations. Lebanon used a tier 1 methodology in all the categories, using EFs from the Revised 1996 IPCC Guidelines or the

IPCC good practice guidance. Lebanon reported that it has started intersectoral dialogues with relevant data providers to improve the availability of information to estimate emissions from agriculture.

36. For the LULUCF sector, emissions reported for 2013 amounted to 149.95 Gg CO_2 eq, or 0.57 per cent of the total national GHG emissions in 2013 (26,284.69 Gg CO_2 eq), including the LULUCF sector. Estimates of non-CO_2 emissions were also provided. Overall, the net removals from the LULUCF sector fluctuated between a minimum of 3,217.03 Gg CO_2 eq in 2010 and a maximum of 3,450.84 Gg CO_2 eq in 1994. Consistent with the IPCC good practice guidance, Lebanon applied approach 3 for the representation of land-use categories and most land-use change subcategories, whose inclusion in the change detection mapping depended on the resources available. The TTE commends Lebanon for its efforts to develop spatially explicit data on key land-use change subcategories. Emissions from the conversion of land to cropland and grassland were not estimated. During the technical analysis, Lebanon clarified that reliable entry data required to assess land-use changes were not available for certain subcategories. In its calculations, Lebanon took into consideration the carbon contents of above-ground and below-ground biomass, dead organic matter, litter and soil carbon, depending on data availability, and used mostly default values from the IPCC good practice guidance. Lebanon did not include clear information on the carbon pools considered in each subcategory. The TTE notes that including this information could facilitate a better understanding of the information reported.

37. For the waste sector, Lebanon reported emissions of 1,826.66 Gg CO_2 eq, with CH_4 from solid waste disposal sites being a key category of the inventory, representing 80 per cent of the sector's emissions. Lebanon transparently reported data constraints and the procedures undertaken to reconstruct key AD as well as key parameters required to estimate emissions from waste disposal, wastewater handling and waste incineration. Information on CH_4 recovery was obtained from only one out of the four waste disposal facilities considered to implement management practices within the inventory. Waste incineration data were obtained through extrapolation. To enable the TTE to better understand the barriers related to data gathering in this sector, Lebanon clarified, during the technical analysis, that the waste sector is one of the sectors that is governed by different governmental and local-level institutions, which makes it difficult to centralize and collect the data. Under the Information Matters initiative, Lebanon is currently preparing a data collection mechanism to facilitate the acquisition of accurate and complete information on the waste sector, and outlined the capacity-related challenges of different stakeholders for reporting back to the Ministry of Environment. The TTE noted the efforts made by the Party to address existing data gaps and provide a complete report of emissions from the waste sector.

38. Lebanon described the institutional framework for the preparation of its 2013 GHG inventory and transparently identified the sources of AD and EFs in its BUR. The Ministry of Environment, through its climate change office, is the governmental body responsible for climate change policies and is also responsible for the coordination, compilation and development of the Party's GHG inventory, which has been prepared with the support of the United Nations Development Programme. To enable the TTE to better understand the procedures for data gathering, Lebanon clarified during the technical analysis, that a GHG inventory system is yet to be established. Therefore, AD, EFs and other parameters are collected through different mechanisms that depend on each sector's specificities. The TTE notes that describing the procedures undertaken to collect and archive data could facilitate a better understanding of the information reported.

39. Lebanon reported a key category analysis performed for the level of emissions, with eight categories being identified as key, with energy industries as the most significant, and CO_2 being the main gas. The BUR provides information on QA/QC measures applied transversally during the inventory process. The TTE commends Lebanon for providing information on QA/QC procedures in accordance with the IPCC good practice guidance.

40. Lebanon reported information on CO_2 fuel combustion using both the sectoral and the reference approach. Lebanon used data derived from surveys by the IPT Energy Center and from the Ministry of Energy and Water, respectively, to apply both approaches. A

difference of 2.48 per cent was obtained which, as explained in the BUR, can be attributed to the statistical differences in fuel consumption and the use of tier 2 methodology in the transport sector.

41. Information was reported on emissions from international aviation and marine bunker
fuels, which in total amounted to 879.99 Cg CO_2 eq in 2013, mostly stemming from international aviation (90 per cent).

42. Lebanon reported information on its use of GWP values consistent with those provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time-horizon.

43. Lebanon did not report information on the uncertainty assessment of its national GHG inventory. During the technical analysis, Lebanon clarified that although analyses were carried out for the BUR and the third NC, the Party decided not to report them because uncertainty analysis constitutes an area that requires capacity-building. The TTE notes that including this information could facilitate a better understanding of the information reported.

44. The TTE noted that the transparency of the information reported could be enhanced by addressing the areas noted by the TTE in paragraphs 26, 27, 29, 30, 32, 34, 36, 38 and 43 above, which could enable the TTE to better understand the information reported.

45. In paragraphs 27, 30, 38, 40, 41, 42, 43, 45, 47 and 48 of the summary report on the technical analysis of Lebanon's first BUR, the TTE noted where the transparency of reporting on national emissions and removals using consistent time series and the identification of the methods used, sources of AD, EFs and assumptions made could be further enhanced. The TTE also noted that Lebanon took into consideration this area of improvement in sections 2 and 4 and annexes I–V of its second BUR and commends the Party for enhancing the transparency of the information reported.

3. Mitigation actions and their effects, including associated methodologies and assumptions

46. As indicated in table 2 in annex I, Lebanon reported in its BUR, mostly in accordance with paragraphs 11–13 of the UNFCCC reporting guidelines on BURs, information on mitigation actions and their effects, to the extent possible. The TTE commends Lebanon for effectively addressing notes for enhanced transparency from the summary report of the technical analysis of its first BUR, in particular regarding the description of mitigation actions, information on methodologies and assumptions, NAMAs and international market mechanisms.

47. The information reported provides a clear and comprehensive overview of Lebanon's mitigation actions and their effects, including national context, in particular for the energy and LULUCF sectors. In its second BUR, Lebanon framed its commitments to address the challenges of climate change in the context of its sustainable development. Lebanon's Environmental Protection Law is the overarching legal instrument for environmental protection and management in the country. Climate change related efforts in Lebanon are mandated by laws relating to the ratification of the Convention and its Kyoto Protocol. In its NDC under the Paris Agreement, Lebanon has committed to reducing its emissions by 15 per cent by 2030 unconditionally compared with the 'business as usual' scenario and by 30 per cent by 2030, conditional on the provision of financial, technical and capacity-building support.

48. Mitigation actions are further enabled through a set of regulations in other related areas, such as: reduction of air pollution from transport; reduction of energy import by developing local energy, including renewable energy; energy efficiency standards and labels; tax incentives on green products and large-scale renewable energy industries; and decisions relating to the ratification of other conventions, such as the Convention on Biodiversity and the United Nations Convention to Combat Desertification. Most of the mitigation actions in Lebanon are in the energy and LULUCF sectors, which have been identified by the Government as priority sectors for mitigation. Lebanon reported ongoing

work to enhance its NDC implementation and synchronize it with the Sustainable Development Goals. In 2013, mitigation measures implemented in the energy sector contributed to reducing GHG emissions by 513,063 t CO_2 eq, while mitigation actions implemented in the LULUCF sector contributed to removals of 18,996 t CO_2 eq.

49. Consistent with decision 2/CP.17, annex III, paragraphs 11 and 12(a), Lebanon reported comprehensively the names and descriptions of the mitigation actions in the energy and LULUCF sectors in tabular format, including information on the nature of the actions, the coverage and quantitative goals, in tables 79–83 and in annexes VI and VII of the BUR. Lebanon also reported on a set of mitigation actions planned for the transport sector and on three prioritized proposals for NAMAs in the energy, waste and forestry sectors, concerning the development of waste management with a waste-to-energy scheme, promotion of fuel-efficient and hybrid vehicles and implementing a 40 million trees programme. Lebanon reported that these NAMAs present opportunities for both advancing sustainable development and reducing GHG emissions.

50. Lebanon indicated in its BUR that a few mitigation actions in the IPPU, transport, agriculture and waste sectors generating emission reductions are being implemented, but are not well documented, which underestimates its reported emission reductions. Information on those actions, including on GHGs covered, and on progress indicators for mitigation actions in all sectors was not provided in the BUR. During the technical analysis, Lebanon clarified that it has made significant efforts during the past two years to improve the transparency and completeness of its reporting of mitigation actions. Lebanon provided detailed information on ongoing and planned efforts to improve the reporting of mitigation actions and their effects, including on data collection and management for the energy sector, and on the establishment of a mechanism to systemize data collection among stakeholders, and developing indicators to track the progress of mitigation actions in all sectors.

51. Eighteen mitigation actions and categories of mitigation actions in different stages of implementation were reported for the energy sector. Eleven categories of mitigation actions were implemented, while seven mitigation actions were in the planning stage. Lebanon provided comprehensive information on the methodologies and underlying assumptions used for the implemented categories of mitigation actions, which the Party indicated were based on the Revised 1996 IPCC Guidelines and national grid EFs. Lebanon used technology-specific capacity factors of renewable energy systems collected from national and international reports and publications to quantify the generated energy in cases where no data on energy savings were available for a specific mitigation action. Lebanon clearly reported the assumptions used to calculate parameters, including for savings from energy efficiency, lifespan of activities and degradation.

52. The implemented categories of mitigation actions mainly concerned improvements in energy efficiency and promotion of renewable energy sources. In 2013 they resulted in GHG emission reductions of 513,063 t CO_2, with the expansion of solar water heaters accounting for 48 per cent of reductions and the "3 million lamp" initiative aiming to replace 3 million incandescent lamps with compact fluorescent lamps for 1.5 million households accounting for 51 per cent of reductions. Lebanon also reported seven planned mitigation actions to improve energy efficiency in thermal power plants and introduce renewable energy in public power generation, the implementation of which has not started. The estimated annual GHG reduction potential of these actions is 1,312,966 t CO_2. The objectives of the mitigation actions in the energy sector were clearly reported, but information on steps taken and envisaged per individual mitigation action were not provided in the BUR.

53. Twenty mitigation actions in the LULUCF sector were reported. Fourteen of these actions were completed prior to 2012. Six of these actions were still ongoing or had started in the period 2012–2013. Lebanon noted that the information on mitigation actions in the LULUCF sector provided in the second BUR includes reviews and updates of the information provided in the first BUR, including new information on progress achieved and new initiatives launched in 2012 and 2013. Lebanon provided comprehensive information on the methodologies and underlying assumptions used for the seven ongoing mitigation actions in the LULUCF sector, which the Party indicated was based on the IPCC good

practice guidance for LULUCF. Lebanon reported clearly the assumptions used to calculate parameters where data were missing, such as for the calculation of annual change in carbon stock of dead organic matter and soils; the type of land of plantations; and quantity and type of tree species planted. The mitigation actions in the LULUCF sector are mainly in the areas of afforestation and reforestation. Lebanon reported that the 14 completed actions had annually removed 3,293 t CO_2 eq in the period 2005–2011, but continue to generate removals after the completion of the underlying projects that have not been reported, while the 6 ongoing actions removed 18,996 t CO_2 eq in 2013. The objectives of the mitigation actions in the LULUCF sector were clearly reported, but information on steps taken and envisaged per individual mitigation action was not provided in the BUR.

54. Seven planned mitigation actions in the transport sector were reported. They are included in a sectoral master plan prepared by the Ministry of Transport, which is pending approval. The actions mainly concern measures to improve public transportation and infrastructure. Lebanon expects that the full implementation of the master plan would induce significant emission reductions, but could not report quantified data in this BUR. The TTE notes that providing further information on actions in the transport sector in future BURs could enable the TTE to have a better understanding of the information reported.

55. Lebanon has reported information on its domestic MRV arrangements as a cross-cutting issue, as described in paragraph 22 above. In relation to mitigation actions, Lebanon additionally reported on its institutional arrangements for approving and submitting NAMAs to the UNFCCC.

56. The TTE noted that the transparency of the information reported could be further enhanced by providing information in the BUR on the areas noted in paragraphs 50 and 52–54 above, namely information on mitigation actions in all sectors in tabular format, as well as on progress indicators and steps taken and envisaged per individual mitigation action. Including this information could enable the TTE to better understand the information reported.

57. In paragraphs 53–59, 60 and 61 of the summary report on the technical analysis of Lebanon's first BUR, the TTE noted where the transparency of reporting could be enhanced, namely by providing information on the mitigation potential of all implemented actions, planned NAMAs and involvement in international market mechanisms. The TTE noted that Lebanon took into consideration these areas of improvement in the section on the preparation of NAMAs, the section on information on international market mechanisms and the introductory part of chapter III on mitigation policies and actions, as well as in the sections on energy, LULUCF and transport in chapter III and in annexes VI and VII of its second BUR. The TTE commends Lebanon for enhancing the transparency of the information reported and notes that transparency could be further enhanced by providing further information on the mitigation potential of all implemented actions.

4. Constraints and gaps, and related technology, financial, technical and capacity-building needs, including a description of support needed and received

58. As indicated in table 3 in annex I, Lebanon reported in its BUR, partially in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs, information on finance, technology and capacity-building needs and support received.

59. In its BUR Lebanon reported on constraints, gaps and related needs for the BUR preparation process, inventory preparation, capturing and reporting of mitigation actions, reporting of finance and capacity-building needs and support received and the establishing of a national MRV system. Those needs were not classified into financial, technical and capacity-building needs. Lebanon reported that the Party has yet to enhance its capacity to undertake MRV of support with respect to mapping domestic and international climate finance flows, clarifying the support received, identifying support gaps, enhancing related decision-making and ultimately supporting Lebanon's NDC implementation as constraints. During the technical analysis, Lebanon informed the TTE that owing to the lack of time, budget and personnel limitations, Lebanon was not able to conduct a deeper analysis on gaps and needs to classify them per reporting provision. The TTE notes that the

transparency of the information reported could be further enhanced by clearly outlining financial, technical and capacity-building needs.

60. Lebanon reported information on support received from the GEF and other bilateral (mainly EU) and multilateral institutions, including the USD 352,000 from the GEF received for preparing its second BUR. Lebanon reported financial resources (which included some technical assistance) and capacity-building support received. However, information on technology transfer was not provided and the support received was not clearly identified as financial, technical and capacity-building support. Lebanon further reported that information in the BUR does not provide a comprehensive overview of the financial, technical and capacity-building support received in relation to climate change in the country because of the different constraints related to the collection of data on support received. During the technical analysis, Lebanon informed the TTE that with the support of the EU ClimaSouth project, Lebanon is building the capacity of its institutions to track support (finance, capacity-building, technology transfer and technical assistance) needed and received for climate change activities, including the development of criteria and standards for reporting on climate finance. The TTE notes that the transparency of the information reported could be further enhanced by clearly outlining financial, technical and capacity-building support received.

61. Information on technology needs and the technology support received was not reported in the BUR. During the technical analysis, Lebanon informed the TTE that an updated technology needs assessment was proposed under the fourth national communication project and will be undertaken once it is approved by the GEF. The TTE noted that transparency could be enhanced by providing information on nationally determined technology needs and support received.

D. Identification of capacity-building needs

62. In consultation with Lebanon, the TTE identified the following capacity-building needs related to the facilitation of the preparation of subsequent BURs and participation in ICA:

(a) Develop specific studies and data collection/management tools with the aim of improving the availability of country-specific EFs, refine assumptions and develop higher-quality AD to estimate GHG emissions from identified key categories, in particular:

(i) Refine assumptions on the share of energy demand covered by private generators and the number of private generators, load, technologies, quantities and type of fuels used, as well as develop data management tools and arrangements to collect data from private generators on a regular basis for the category stationary combustion: manufacturing and construction – private electricity generators in the energy sector;

(ii) Refine assumptions on the kilometres (mileage) of private passenger vehicles for the category mobile combustion: private passenger vehicles in the energy sector;

(iii) Collect country-specific values on the carbon content of fuels, including natural gas, the use of which is expected to rise in the coming years, for emission estimates in the energy sector;

(iv) Improve the completeness of existing data sets for crop production in the agriculture sector;

(v) Improve existing data sets and EFs for direct N_2O emissions, as well as develop data management tools and arrangements to collect data on a regular basis on agricultural practices/use of nitrogen fertilizer in the agriculture sector;

(vi) Improve the completeness of existing data sets as well as develop management tools and arrangements to collect data on a regular basis on animal rearing for cattle and other (horses, mules, camels and asses) in the agriculture sector;

(vii) Develop AD on solid waste generation, refine country-specific data on CH_4 recovery, refine data on the composition of waste and management practices, and develop data management tools and arrangements to collect data on respective entities on a regular basis for solid waste disposal in the waste sector;

(viii) Refine methods and/or develop tools to estimate wastewater generation as well as develop data and tools to collect information on the quantities and characteristics of industrial wastewater on a regular basis for wastewater handling in the waste sector;

(b) Develop the technical capacity in the country to improve assumptions on the stock of fuels and AD on end uses of diesel as preliminary steps towards establishing an annual national energy balance;

(c) Develop the technical capacity of sectoral data providers through one-to-one, targeted training in collecting and regularly publishing key data required for GHG emission estimations in the energy, agriculture, IPPU and waste sectors;

(d) Implement a mechanism that allows for systematic spatial monitoring and reporting of all land-use subcategories contained in the IPCC guidance and management practices, particularly for cropland and grassland;

(e) Implement a national GHG inventory system, including:

(i) Institutional arrangements that clarify the role of sectoral stakeholders in producing and communicating inventory-relevant information;

(ii) Processes and protocols to ensure the systemic collection, processing, revision and updating of inventory information (AD, EFs and relevant methods and assumptions) by sectoral data providers;

(iii) A reporting management system that includes documentation and archiving procedures;

(iv) QA/QC protocols and uncertainty management procedures;

(f) Develop the technical capacity to perform and report the uncertainty analysis of the GHG inventory on a regular basis;

(g) Develop the technical capacity of sectoral data providers to estimate and report on the uncertainty of key AD, EFs and other parameters;

(h) Enhance technical capacity in the short term to further improve the data collection, analysis and reporting on mitigation actions in the energy sector, in particular MISCA, which is currently being developed with support from the EU-funded ClimaSouth project;

(i) Enhance technical capacity in the medium term to improve data collection, analysis and reporting of mitigation actions in other sectors, such as the agriculture and waste sectors, and to replicate best practices from the energy sector, as appropriate and in accordance with the specific needs of each sector;

(j) Enhance technical capacity to develop progress indicators and establish a mechanism to facilitate the systematic collection of information among stakeholders to enable the tracking of progress of mitigation actions in all sectors, complementing the planned work in this area with support from the GEF CBIT, which is expected to focus mainly on the energy sector;

(k) Enhance technical capacity to document and collect information on steps taken or envisaged specific to each mitigation action for all sectors;

(l) Develop a methodology or systemic approach in order to identify and classify needs as financial, technical and capacity-building needs by:

(i) Mapping the roles and responsibilities of relevant actors and defining their roles in the data gathering/reporting process in order to avoid duplication and/or inconsistencies between actors;

(ii) Enhancing the methodology for the data gathering and reporting process;

(iii) Improving the capacity of the technical staff responsible for providing data;

(m) Complement the EU ClimaSouth project by following up on key recommendations for further steps to track support received;

(n) Develop a methodology or systemic approach in order to estimate the costs of actual technologies and to conduct cost–benefit analysis;

(o) Develop indicators for technology projects and an approach to report comprehensively on different types of support.

63. The TTE noted that, in addition to those identified during the technical analysis, Lebanon reported several capacity-building needs in table 85 of the BUR, covering the following areas:

(a) Human resources;

(b) Funding cycles;

(c) Institutional arrangements;

(d) IPCC guidelines;

(e) Enhancing national ownership of reports;

(f) Identification of capacity-building needs.

64. As mentioned in paragraph 81 of the summary report on the technical analysis of Lebanon's first BUR, the TTE, in consultation with Lebanon, identified and prioritized capacity-building needs. In its second BUR, Lebanon reflected that although limited progress has been made in meeting some of those capacity-building needs, the vast majority of such needs remain valid. For example, some progress has been made in creating databases, institutionalizing data generation and sharing, developing national EFs and identifying information related to the progress of implementation of some mitigation actions in the energy sector.

III. Conclusions

65. The TTE conducted a technical analysis of the information reported in the second BUR of Lebanon in accordance with the UNFCCC reporting guidelines on BURs. The TTE concludes that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs and provides an overview of: national circumstances and institutional arrangements relevant to the preparation of NCs and BURs; the national inventory of anthropogenic emissions by sources and removal by sinks of all GHGs not controlled by the Montreal Protocol; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps and related financial, technical and capacity-building needs; the level of support received to enable the preparation and submission of BURs; and domestic MRV. During the technical analysis, additional information was provided by Lebanon about the AD, EFs and other parameters used for emission/removals estimations for all sectors in the form of the worksheets of the Revised 1996 IPCC Guidelines. The TTE concluded that the information reported is mostly transparent.

66. Lebanon reported information on the institutional arrangements relevant to the preparation of BURs. Lebanon provided an update of its national circumstances, including government structure, population profile, geographic profile, climate profile, economic profile and information on the energy, transport, industry, waste, agriculture and LULUCF sectors. Lebanon transparently described in its BUR the existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. Lebanon also provided information on MISCA, which is designed to track progress of implementation of Lebanon's NDC and to help the Ministry of Environment to track its own progress and automatically calculate resulting CO_2 reductions. During the technical analysis, Lebanon informed the TTE that the Party's proposal submission to the GEF under CBIT, under

which activities related to the identification of mitigation progress and reporting indicators have been included, has been recently approved.

67. In its second BUR, Lebanon reported information on its national GHG inventory for 2013 and a consistent time series covering the years 1994, 2000, 2006, 2010 and 2012. This included GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks as well as the precursor gases. Estimates of fluorinated gases were not provided owing to difficulties in obtaining the necessary data. The inventory was developed on the basis of the Revised 1996 IPCC Guidelines, although in some cases the IPCC good practice guidance and the IPCC good practice guidance for LULUCF were applied for individual key categories. The total GHG emissions for 2013 were reported as 26,285 CO_2 eq (excluding LULUCF) and 22,766 CO_2 eq (including LULUCF). Key categories were identified, with CO_2 and stationary combustion in the energy sector identified as the main gas and key category, respectively.

68. Lebanon reported information on mitigation actions and their effects, including on its mitigation commitment, as contained in its NDC under the Paris Agreement, of reducing 15 per cent of GHG emissions by 2030 unconditionally compared with the 'business as usual' scenario and by 30 per cent by 2030, conditional on the provision of financial, technical and capacity-building support. The mitigation actions were categorized in the context of sectors and groups of actions. For the energy sector the GHG emission reductions amounted to 513,063 t CO_2 eq for 2013 and estimated potential annual GHG emission reductions from planned measures in the public power production were estimated as 1,312,996 t CO_2 eq. In LULUCF, GHG emission reductions amounted to 18,996 t CO_2 eq for 2013 from ongoing actions and annual GHG removals of 3,293 t CO_2 eq were achieved in the period 2005–2011 from projects concluded prior to 2012, which continue to generate removals beyond the project completion that have not been reported.

69. Lebanon reported information on key constraints, gaps and related needs. Lebanon presented information on gaps, constraints and needs in a tabular format. However, the needs and support were not clearly identified as financial, technical and capacity-building needs and support received. During the technical analysis, Lebanon provided additional information on key challenges and needs, such as designing and implementing a systematic methodology for identifying constraints, gaps and needs, and translating the identified needs into financial, technical, technological and capacity-building needs. Additionally, Lebanon informed the TTE that the EU ClimaSouth project will be used to build capacity of institutions in Lebanon to track support received. Lebanon reported information on support received from the GEF and other bilateral and multilateral institutions, including the USD 352,000 from the GEF received for preparing its second BUR. Information on technology needs and technology support received was not reported in the BUR but during the technical analysis Lebanon informed the TTE that the update of its technology needs assessment is proposed under the Fourth National Communication project.

70. The TTE, in consultation with Lebanon, identified 15 capacity-building needs listed in chapter II.D above that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention. The Party identified the capacity-building needs listed in paragraph 62(a)–(e) and 62(h)–(m) above as high-priority needs, those listed in paragraph 62(n) and (o) above as medium-priority needs and those referred to in paragraph 62(f) and (g) as low-priority needs.

Annex I

Extent of the information reported by Lebanon in its second biennial update report

Table 1
Identification of the extent to which the elements of information on greenhouse gases are included in the second biennial update report of Lebanon

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	Yes	Lebanon submitted its second BUR in December 2017; the GHG inventory reported is for 2013.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established by the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the COP or those determined by any future decision of the COP on this matter.	Yes	Lebanon used a combination of the Revised 1996 IPCC Guidelines, IPCC good practice guidance and the IPCC good practice guidance for LULUCF.
Decision 2/CP.17, annex III, paragraph 5	The updates of the sections on the national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	Yes	
Decision 2/CP.17, annex III, paragraph 6	Non-Annex I Parties are encouraged to include, as appropriate and to the extent that capacities permit, in the inventory section of the BUR:	Yes	
	(a) Tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Yes	Comparable information was reported in tables 52–55 and the tables contained in annex IV to the BUR.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Comparable information was reported in tables 3, 8–25, 29–31 and 33–49 in the main text of the BUR and in the tables contained in annexes I, II and III to the BUR.
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in the previous NCs.	Yes	This information is reported for the years 1994, 2000, 2006, 2011 and 2012.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their national communications are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000).	Yes	This information is reported for the years 1994, 2000, 2006, 2011 and 2012.
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:		
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors);	Yes	

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6).	No	Information on emissions by sources of HFCs, PFCs and SF_6 was not reported owing to a lack of data.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party included an inventory technical annex in its BUR.
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Partly	Information on how data are collected from providers and archived is not provided.
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of:		
	(a) CO_2;	Yes	
	(b) CH_4;	Yes	
	(c) N_2O.	Yes	
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:	No	Information on emissions by sources of HFCs, PFCs and SF_6 was not reported owing to a lack of data.
	(a) HFCs;	No	
	(b) PFCs;	No	
	(c) SF_6.	No	
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emission by sources of other GHGs, such as:		
	(a) CO;	Yes	
	(b) NOx;	Yes	
	(c) NMVOCs.	Yes	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SOx, included in the Revised 1996 IPCC Guidelines may be included at the discretion of the Parties.	Yes	The Party reported emissions of SOx.
Decision 17/CP.8, annex, paragraph 18	Non-Annex I Parties are encouraged, to the extent possible and if disaggregated data are available, to estimate and report CO_2 fuel combustion emissions using both the sectoral and the reference approach and to explain any large differences between the two approaches.	Yes	
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation;	Yes	
	(b) Marine bunker fuels.	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO_2 eq should use the GWP provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time-horizon.	Yes	The Party used the GWP provided in the IPCC Second Assessment Report.
Decision 17/CP.8,	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic		

Decision	*Provision of the reporting guidelines*	*Yes/partly/ no/NA*	*Comments on the extent of the information provided*
annex, paragraph 21	emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol;	Partly	The Party reported information on the guidelines it applied and the choice of method for energy, industrial processes, agriculture and waste. However, information on methods used for land-use change detection, and how EFs and other parameters were applied to estimate LULUCF emissions was not provided.
	(b) Explanation of the sources of EFs;	Yes	
	(c) Explanation of the sources of AD;	Yes	
	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:	NA	
	(i) Source and/or sink categories;		
	(ii) Methodologies;		
	(iii) EFs;		
	(iv) AD;		
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes	
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1 and 2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	Partly	The Party reported table 1 only. Notation keys were not used consistently in reporting on LULUCF emissions and removals.
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:		
	(a) Level of uncertainty associated with inventory data;	No	Owing to a lack of data, the Party did not report this information.
	(b) Underlying assumptions;	No	Owing to a lack of data, the Party did not report this information.
	(c) Methodologies used, if any, for estimating these uncertainties.	No	Owing to a lack of data, the Party did not report this information.

Note: The parts of the UNFCCC reporting guidelines on BURs on reporting information on GHG emissions by sources and removals by sinks in BURs are contained in decision 2/CP.17, paragraphs 3–10 and 41(g). Further, as per paragraph 3 of those guidelines, non-Annex I Parties are to submit updates of their national GHG inventories in accordance with paragraphs 8–24 of the "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention", contained in the annex to decision 17/CP.8. The scope of such updates should be consistent with the non-Annex I Party's capacity and time constraints and the availability of its data, as well as the level of support provided by developed country Parties for biennial update reporting.

Table 2
Identification of the extent to which the elements of information on mitigation actions are included in the second biennial update report of Lebanon

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in a tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Partly	Lebanon provided comprehensive information in tabular format on individual and sectoral mitigation actions in the energy and LULUCF sectors. However, as Lebanon indicated in its BUR, mitigation actions are also being implemented in other sectors. Information on these actions, including on GHGs covered, was not provided in tabular format.
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	Information on progress indicators for the mitigation actions in all sectors was not reported.
	(b) Information on:		
	(i) Methodologies;	Yes	
	(ii) Assumptions;	Yes	
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Partly	No information was reported on the steps taken or envisaged per individual mitigation actions in all sectors.
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Yes	
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Yes	
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic measurement, reporting and verification arrangements.	Yes	

Note: The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on mitigation actions in BURs are contained in decision 2/CP.17, annex III, paragraphs 11–13.

[a] "Some" is used when the information is provided for at least half of the mitigation actions reported.

[b] "Most" is used when the information is reported for more than half of the mitigation actions reported.

Table 3

Identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the second biennial update report of Lebanon

Decision	*Provision of the reporting requirements*	*Yes/partly/no*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Partly	Financial, technical and capacity-building needs were not differentiated.
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Partly	Lebanon reported on financial resources (which included some technical assistance) and capacity-building support received, but information on technology transfer was not provided.
	(b) Information on technical support received from the GEF, Parties included in Annex II to the Convention and other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Technology needs, which are nationally determined;	No	
	(b) Technology support received.	No	

Note: The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on finance, technology and capacity-building needs and support received in BURs are contained in decision 2/CP.17, annex III, paragraphs 14–16.

Annex II

Documents and information used during the technical analysis

A. Reference documents

IPCC. 1997. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. JL Houghton, LG Meira Filho, B Lim, et al. (eds.). Paris, France: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency. Available at https://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html.

IPCC. 2000. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. J Penman, D Kruger, I Galbally, et al. (eds.). Hayama, Japan: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency/Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/gp/english/.

IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. J Penman, M Gytarsky, T Hiraishi, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html.

"Composition, modalities and procedures of the team of technical experts for undertaking the technical analysis of biennial update reports from Parties not included in Annex I to the Convention". Annex to decision 20/CP.19.

Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=12.

"Modalities and guidelines for international consultation and analysis". Annex IV to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention". Annex III to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention". Annex to decision 17/CP.8. Available at http://unfccc.int/resource/docs/cop8/07a02.pdf#page=2.

Second biennial update report of Lebanon. Available at http://unfccc.int/8722.php.

First, second and third national communications of Lebanon. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-update-reports-non-annex-i-parties/national-communications-submissions/national-communications-submissions.

Summary report on the technical analysis of the first biennial update report of Lebanon. Available at http://unfccc.int/national_reports/non-annex_i_parties/ica/technical_analysis_of_burs/items/10054.php.

B. Additional information provided by the Party

The following documents[1] were provided by the Party in response to requests for technical clarification during the technical analysis:

Filled Revised 1996 IPCC Guidelines workbooks for the 2013 GHG emission inventory.

[1] Reproduced as received from the Party.